IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Charles Edward Baumgartner et al.	§	Group Art Unit:	3737
Serial No. 10/814,830	§	Confirmation No.:	6500
Filed: March 31, 2004	§	Examiner:	Ramirez, John Fernando
For: System and Method for Power Management in an Ultrasound System	§	Atty. Docket:	134678-1 GERD:0086/SWA

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SUPPLEMENTAL REPLY BRIEF
PURSUANT TO 37 C.F.R. §§ 41.31 AND 41.41

This Reply Brief is being filed in furtherance to the Pre-Appeal Brief Request for Review and the Notice of Appeal filed on November 13, 2006, the Notice of Panel Decision from Pre-Appeal Brief Review mailed on February 12, 2007, the Appeal Brief filed on April 10, 2007, the Examiner's Answer mailed on May 5, 2009, the Supplemental Appeal Brief filed on February 19, 2010, and the Supplemental Examiner's Answer mailed on February 3, 2010. In the Supplemental Examiner's Answer, the Examiner required a Reply Brief in order to maintain the present appeal. Accordingly, Appellants hereby address the Examiner's new ground of rejection on page 8 and some of the Examiner's arguments set forth in the "Response to Argument" section on pages 8-13 of the Supplemental Examiner's Answer.

Claim Rejection under 35 U.S.C. § 112, First Paragraph

In the Supplemental Examiner's Answer, the Examiner rejected claims 9-21 and 23 under 35 U.S.C. § 112, First Paragraph for allegedly adding new matter. Appellants respectfully traverse this rejection.

Legal Precedent and Guidelines

First, regarding the written description requirement, the initial burden of proof regarding the sufficiency of the written description falls on the Examiner. *See In re Wertheim*, 541 F.2d 257, 263, 191 U.S.P.Q. 90, 97 (C.C.P.A. 1976); *see* M.P.E.P. § 2163.04. Accordingly, the Examiner must present evidence or reasons why persons skilled in the art would not recognize a description of the claimed subject matter in the applicant's disclosure. *Id.* 541 F.2d at 262, 191 U.S.P.Q. at 96. An objective standard for determining compliance with the written description requirement is, "does the description clearly allow persons of ordinary skill in the art to recognize that he or she invented what is claimed." *In re Gosteli*, 872 F.2d 1008, 1012, 10 U.S.P.Q.2d 1614, 1618 (Fed. Cir. 1989); M.P.E.P. § 2163.02. The examiner should review the claims and the entire specification, including the specific embodiments, figures, and sequence listings, to understand how applicant provides support for the various features of the claimed invention. *See* M.P.E.P. § 2163, II, A, 2. The subject matter of the claim need not be described literally (i.e., using the same terms or *in haec verba*) in order for the disclosure to satisfy the description requirement. *See* M.P.E.P. § 2163.02. In other words, the written description requirement does not require the claims to recite the same terminology used in the disclosure. The patentee may be his own lexicographer. *Ellipse Corp. v. Ford Motor Co.*, 171 U.S.P.Q. 513 (7th Cir. 1971), *aff'd.* 613 F.2d 775 (7th Cir. 1979), *cert. denied*, 446 U.S. 939 (1980). The absence of definitions or details for well-established terms or procedures should not be the basis of a rejection under 35 U.S.C. 112, first paragraph, for lack of adequate written description. *See* M.P.E.P. § 2163, II, A, 1. Information which is well known in the art need not be described in detail in the specification. *See Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1379-

80, 231 U.S.P.Q. 81, 90 (Fed. Cir. 1986); *see* M.P.E.P. § 2163, II, A, 2. By disclosing in a patent application a device that inherently performs a function or has a property, operates according to a theory or has an advantage, a patent application necessarily discloses that function, theory or advantage, even though it says nothing explicit concerning it. *See* M.P.E.P. § 2163.07(a). Moreover, any information contained in any part of the application as filed, including the specification, claims and drawings, may be added to other portions of the application without introducing new matter. Accordingly, if an application as originally filed contains a claim disclosing material not disclosed in the remainder of the specification, the applicant may amend the specification to include the claimed subject matter. *In re Benno*, 768 F.2d 1340, 226 U.S.P.Q. 683 (Fed. Cir. 1985).

Second, regarding the enablement requirement, the Examiner has the initial burden to establish a *reasonable basis* to question the enablement provided for the claimed invention. *In re Wright*, 999 F.2d 1557, 1562, 27 U.S.P.Q.2d 1510, 1513 (Fed. Cir. 1993). The test for enablement, as set forth by the Supreme Court, is whether the experimentation needed to practice the invention is undue or unreasonable? *Mineral Separation v. Hyde*, 242 U.S. 261, 270 (1916). A patent need not teach, and preferably omits, what is well known in the art. *In re Buchner*, 929 F.2d 660, 661, 18 U.S.P.Q.2d 1331, 1332 (Fed. Cir. 1991). The *undue experimentation* test essentially evaluates whether one of reasonable skill in the art can make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation. *U.S. v. Telectronics, Inc.*, 857 F.2d 778, 785, 8 U.S.P.Q.2d 1217, 1223 (Fed. Cir. 1988). As long as the specification discloses at least one method for making and using the claimed invention that bears a *reasonable correlation* to the entire scope of the claim, then the enablement requirement of section 112 is satisfied. *In re Fisher*, 427 F.2d 833, 839, 166 U.S.P.Q. 18, 24 (C.C.P.A. 1970). The specification need not contain an example if the invention is otherwise disclosed in such manner that one skilled in the art will be able to practice it without an undue amount of experimentation. *In re Borkowski*, 422 F.2d 904, 908, 164 U.S.P.Q. 642, 645 (C.C.P.A. 1970).

In regard to the "skilled in the art" standard, in cases involving both the art of computer programming, and another technology, the examiner must recognize that the knowledge of persons skilled in both technologies is the appropriate criteria for determining sufficiency. See *In re Naquin*, 398 F.2d 863, 158 U.S.P.Q. 317 (C.C.P.A. 1968); *In re Brown*, 477 F.2d 946, 177 U.S.P.Q. 691 (C.C.P.A. 1973); and *White Consol. Indus. v. Vega Servo-Control, Inc.,* 214 U.S.P.Q. 796, 822 (S.D.Mich. 1982), *aff'd on related grounds,* 713 F.2d 788, 218 U.S.P.Q. 961 (Fed. Cir. 1983).

Deficiencies of Rejection

In the Supplemental Examiner's Answer, the Examiner asserted that claims 9-21 and 23 recite subject matter not supported by the original disclosure (i.e., new matter). *See* Examiner's Answer, pages 5-6. Independent claim 9 recites "physically sensing engagement of an ultrasound module with a subject using a non-ultrasonic sensor; and switching power modes of the ultrasound module based on the sensed engagement." Emphasis added. Claims 10-14 depend from independent claim 9. Similarly, independent claim 15 recites "an ultrasonic transducer configured to scan a subject; and a non-ultrasonic sensing element configured to detect physical proximity of the hand holdable ultrasound probe relative to the subject; and a control system coupled to the hand holdable ultrasound probe, wherein the control system is configured to switch the ultrasound probe between a plurality of power modes based on feedback from the sensing element." Emphasis added. Claims 16 and 17 depend from independent claim 15. Similarly, independent claim 18 recites "providing an ultrasound unit having an ultrasound transducer to scan a subject and a physical sensor to non-ultrasonically detect proximity of a subject relative to the ultrasound unit; and providing a control system to change power levels of the ultrasound unit based on the feedback from the physical sensor." Emphasis added. Claims 19-21 depend from independent claim 18. Similarly, independent claim 23 recites "means for sensing non-ultrasonic signals to detect proximity of an ultrasound module relative to a subject to be scanned by ultrasonic

transducers of the ultrasound module; and means for switching power modes of the ultrasound probe based on proximity feedback from the means for sensing." Emphasis added.

In the Examiner's rejection of claims 9-21 and 23 under Section 112, first paragraph, the Examiner specifically stated:

> The original disclosure fails to specify that the sensor is **non-ultrasonic** and detects proximity **non-ultrasonically** as now claimed. Therefore these limitations are considered to be new matter. Supplemental Examiner's Answer, page 8 (emphasis in original).

Appellants respectfully traverse the Examiner's rejection relating to the non-ultrasonic limitation of the claims. Appellants stress that the specification and drawings clearly support the claimed subject matter. For the convenience of the Board, Appellants reproduce FIG. 1 below (along with labels for 18 and 20) to facilitate the following discussion.

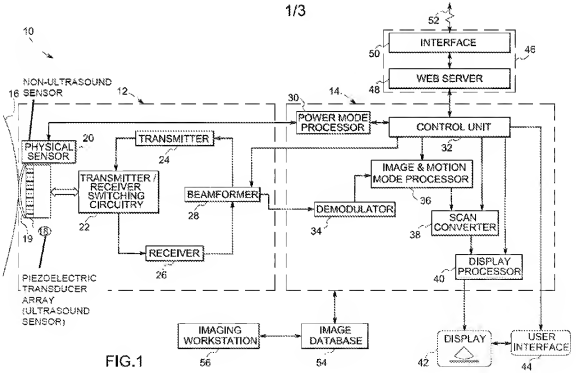

FIG.1

As indicated in FIG. 1 above, the physical sensor 20 is independent from the ultrasound sensor (e.g., piezoelectric transducer array 18). Furthermore, only the physical sensor 20 provides feedback (i.e., non-ultrasonic feedback) to the power mode processor 30, which in turn communicates with the control unit 32. In other words, the ultrasound sensor (e.g., piezoelectric transducer array 18) does not provide any feedback (i.e., ultrasound feedback) to the power mode processor 30. As a result, the power mode processor 30 is clearly shown as relying solely on non-ultrasonic feedback to control the power mode of the ultrasound unit.

Although Appellants do not intend or suggest that the specification should be read into the claims, Appellants submit that the original specification discloses the following:

> **[0004]** In other applications, the power of the ultrasound probe has been switched to a low power mode after a predetermined time or upon exceeding a certain temperature. Previous applications sense the ultrasound pulse/echo to determine when the probe is actively imaging as a means of reducing heat generated by an ultrasound probe. However, such a technique could interrupt the imaging process.
>
> **[0005]** Therefore, a need exists for a technique to facilitate cooling and power control of an ultrasound imaging system.
>
> **[0017]** In ultrasound control unit 14, the control unit 32 is coupled to a power mode processor 30, which is communicatively coupled to physical sensors 20. Similarly, the power mode processor 30 may be located within the ultrasound probe 12. As discussed above, the physical sensors 20 detect various physical characteristics, such as heat transfer, contact pressure, proximity distance, and other characteristics of the subject 16. These sensed physical characteristics are then transmitted to the power mode processor 30, which controls the power mode of the ultrasound probe 12 via the control unit 32. For example, the power mode processor 30 and control unit 32 may comprise a plurality of power modes, such as a low power mode and an operational power mode, for the ultrasound probe12. If the physical sensors 20 detect engagement or approaching engagement of the ultrasound probe 12 with the subject 16, then the power mode may be shifted from the low power mode to the operational power mode to facilitate ultrasonic scanning of the subject 16. Similarly, if the physical sensors 20 detect disengagement of the ultrasound probe 12 away from the subject 16, then the power mode may be shifted from the operational power mode to the low power mode to facilitate power savings

> and cooler operation of the ultrasound probe 12 **while scanning is not being performed**. Accordingly, the control unit 32 modulates the power of the electronic components within the ultrasound probe 12 in accordance with the signals received from the power mode processor 30 and the physical sensors 20.
>
> **[0032]** At block 96, the sensing elements 90, 92, and 94 generate and transmit data indicative of the ultrasound probe 58 usage to the control unit 32. In certain embodiments, the control unit 32 is located within the ultrasound probe 58, rather than the main system (e.g., ultrasound control unit 14). The processor receives the data and processes it to generate control signals for switching the ultrasound probe 58 into a plurality of different power modes 98. When the ultrasound probe is switched "ON" and the operator is scanning the subject, the ultrasound probe is switched into a normal full power mode 102. Once the control unit 32 detects that the ultrasound probe 58 is in a power "ON" state but is **not actively scanning** the subject 16, the ultrasound probe 58 may be switched into several low power modes 100. Depending on the usage of the ultrasound probe 58, the control unit 32 switches the ultrasound probe 58 into one of the several low power modes. When the operator resumes scanning, the control unit 32 switches the ultrasound probe 58 into the normal full power mode. Application, paragraphs [0004], [0005], [0017], and [0032] (emphasis added).

As indicated above, the original specification clearly discloses that the ultrasound probe does not ultrasonically scan in association with the physical sensor. *See id.* In other words, the physical sensor is independent from the ultrasound probe, and thus the physical sensor does not produce any ultrasound and associated heat. *See id.* Furthermore, the original specification clearly teaches away from a technique that would "sense the ultrasound pulse/echo to determine when the probe is actively imaging," as such a technique would produce a significant amount of heat and reduce performance of the ultrasound probe. *See* Application, paragraphs [0004] and [0005]. In view of these passages, among others, Appellants stress that one of ordinary skill in the art would readily recognize the description of the claimed subject matter in the original specification.

For at least these reasons, among others, Appellants respectfully request withdrawal of the rejections under Section 112, First Paragraph.

Response to Argument

In the Examiner's Answer, the Examiner asserted that "engagement with the subject" would be obvious in view of the *indirect* sensing techniques disclosed by Emery. *See* Supplemental Examiner's Answer, page 9. In particular, the Examiner stated:

> Although Emery does not explicitly state that these independent physical sensors detect **'engagement with the subject'** as called for in the claim to the degree of inherency necessary for anticipation (if the sensor portion of a probe is sensing the amount of light reflected by tissue then the sensor is at least indirectly engaged with the subject because the tissue is part of the subject), it would have been obvious to use at least the tissue reflectivity sensor to sense engagement with the subject in order to determine if the probe is coupling into a reflecting medium such as air or into tissue (subject). Supplemental Examiner's Answer, page 9 (emphasis in original).

Appellants respectfully traverse the Examiner's rejection and interpretation of the "engagement with the subject" language recited in the claims. One of ordinary skill in the art would readily understand that "engagement" means contact rather than non-contact, particularly in view of the claim language, the specification, and ordinary meaning of the term "engagement." For example, Appellants stress that independent claims 1 and 9 recite "engagement," whereas indepenent claims 15, 18, and 23 recite "proximity." As appreciated, proximity may be a prelude to eventual engagement, and thus a measurement of proximity is useful in detecting eventual engagement. Although Appellants do not intend or suggest that the specification should be read into the present claims, Appellants stress the the specification provides context for the claimed subject matter consistent with Appellants' position. For example, the specification discloses:

> As discussed in detail below, the physical sensors 20 facilitate power management of the ultrasound probe 12 by sensing physical engagement *or* proximity of a subject, such as a patient, such that the ultrasound probe 12 can be powered up for ultrasonic scanning. Application, paragraph [0012] (emphasis added).

> [0015] In the ultrasound probe 12, the physical sensors 20 detect when the ultrasound probe 12 is in contact, close proximity, or generally approaching the subject to be ultrasonically scanned by the ultrasonic transducer array 18. Application, paragraph [0015] (emphasis added).

> As discussed above, the physical sensors 20 detect various physical characteristics, such as heat transfer, contact pressure, proximity distance, and other characteristics of the subject 16. Application, paragraph [0017] (emphasis added).
>
> The ultrasound probe 58 may additionally comprise a physiological sensing element, which senses the presence of skin or other physiological characteristics of the subject 16, so that the electronic components inside the ultrasound probe 58 may be switched "ON" when the ultrasound probe 58 is in contact or proximity with the subject 16. Application, paragraph [0027] (emphasis added).

In view of these passages, among others, Appellants reiterate that "engagement" means "contact" in the present claims, and is not obvious in view of the non-contact techniques disclosed by Emery.

Again, Emery does not teach or suggest any physical sensors used to detect engagement or proximity. Emery merely discloses: (1) motion detectors (2) optical emitter/detector pairs (3) thermal sensors." Emory, col. 5, line 67-col. 6, line 3 (emphasis added). For example, Emory discloses that the "motion detector would simply detect movement of the probe, which primarily occurs during scanning." Emory, col. 6, lines 4-5 (emphasis added). Clearly, none of these sensors is "adapted to sense engagement with a subject to be scanned by the ultrasonic transducer," as recited by claim 1. Motion is clearly not the same as engagement, nor does motion imply some measurement of proximity. For example, a motion sensor may track a velocity or acceleration of an object, while not providing any indication of engagement or proximity. Regarding the optical emitter/detector pairs and the thermal sensors, Emery also fails to teach or suggest any use for detecting engagement or proximity. These additional sensors are concerned with sensing use of an already operating ultrasound probe. For example, the thermal sensors may be used to sense heat of the probe itself, rather than any heat associated with an object being scanned by the probe. Likewise, the optical emitter/dectector pairs may detect light reflected from an object being scanned by the probe, yet these pairs may not provide any indication of engagement or proximity. Emery fails to teach or suggest such detection of "engagement" or "proximity" as recited by the present claims.

For these reasons, among others, Emory cannot support a *prima facie* case of obviousness of independent claims 1, 9, 15, 18, and 23 and their dependent claims. Furthermore, the secondary references do not obviate the deficiencies of Emory. For at least these reasons, among others, Appellants respectfully request withdrawal of the rejections under 35 U.S.C. § 103.

Conclusion

In view of the above remarks, Appellants respectfully submit that the Examiner has provided no supportable position or evidence that would justify the present improper rejections of the present claims. Consequently, Appellants respectfully submit that all pending claims are in condition for allowance. However, if the Examiner or Board wishes to resolve any other issues by way of a telephone conference, the Examiner or Board is kindly invited to contact the undersigned attorney at the telephone number indicated below.

Respectfully submitted,

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